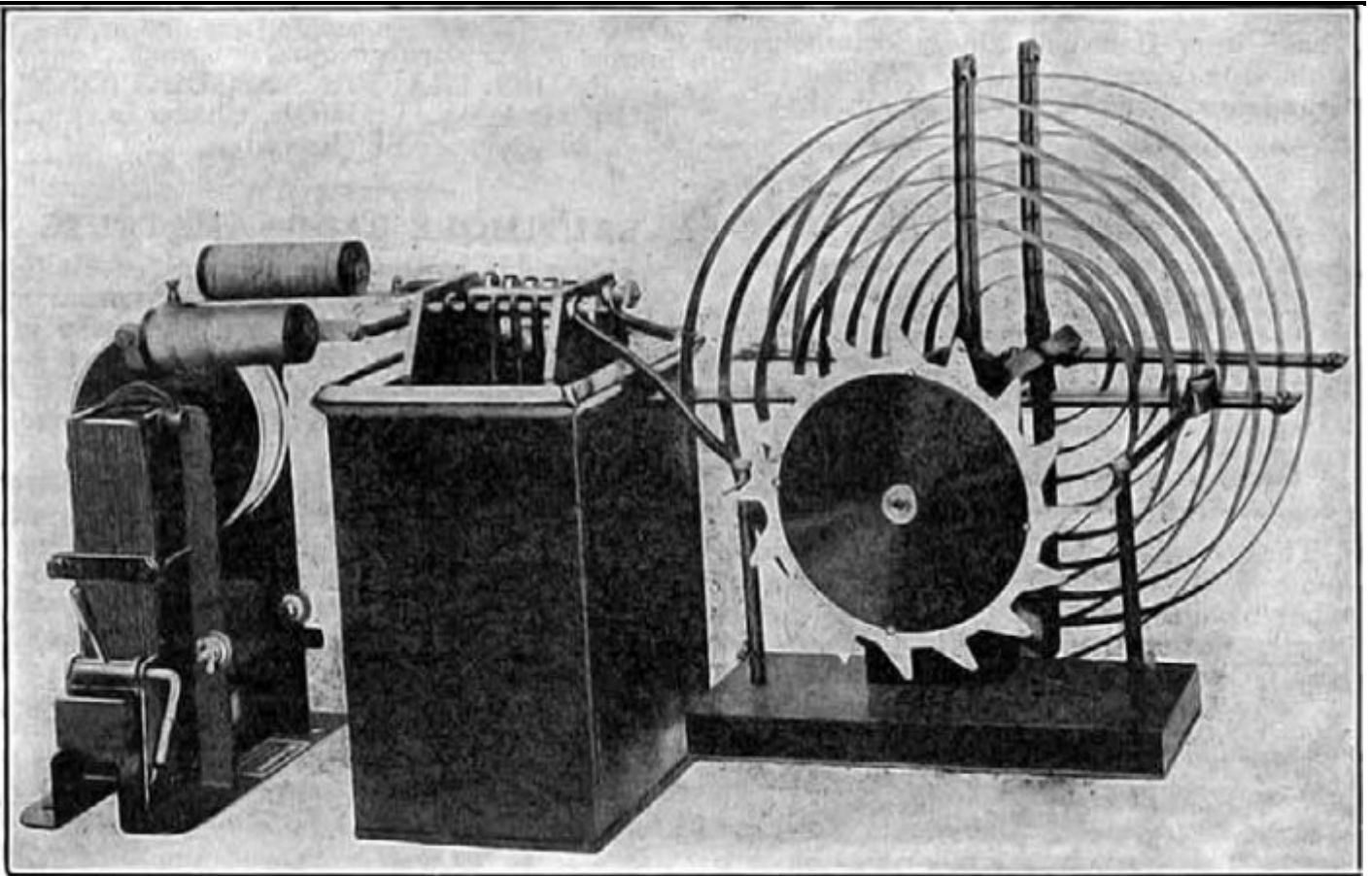


File:Rotary spark gap transmitter.jpg



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Summary

Description **English:** A small spark gap radio transmitter, an obsolete type of radio transmitter used during the wireless telegraphy era. from 1900 to the early 1920s. This was a small transmitter made for hobbyists, claimed to be 95% efficient. It consists of a transformer (*left*) which steps the 120V power line voltage up to 25,000 V. a capacitor (*black rectangle, center*) consisting of parallel metal plates separated by phenolic cloth, immersed in a container of insulating oil to prevent corona discharge losses, an air core RF inductor consisting of two spiral strips of metal (*background, right*), and a rotary spark gap consisting of a toothed metal wheel (*right foreground*) driven by a motor, which rotates next to a stationary electrode. The two cylinders on the lines coming from the top of the transformer (*right*) were chokes to prevent the RF current from the tuned circuit from getting into the transformer.

In operation, the transformer charged the capacitor to a high voltage. When an electrode on the spark wheel passed a stationary electrode, a spark would jump, completing the circuit between the capacitor and coil, making a resonant circuit. The charge on the capacitor flowed rapidly back and

forth between the capacitor plates, through the coil and spark gap, creating a radio frequency oscillating current. The two spiral coils formed an air-core transformer. The oscillating current from the capacitor passed through the near coil (the *primary*), inducing a higher oscillating voltage in the far coil (the *secondary*). The ends of the secondary coil were attached to the transmitting antenna, a long wire suspended in the air, and a ground connection. When the antenna was excited by this oscillating voltage, it radiated radio waves. Each time an electrode on the rotating spark wheel passed the stationary electrode, the spark would generate a brief burst of radio waves. These damped waves repeated at an audio rate, from several hundred to a thousand sparks a second, so the radio signal sounded like a buzz or whine in a radio receiver. A telegraph key was used to turn the transmitter off and on, to spell out text messages in Morse code.

Date 1919

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